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From the INTERNATIONAL BUREAU

To:

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Honeywell International Inc.
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ETATS-UNIS D'AMERIQUENOTIFICATION CONCERNING
TRANSMITTAL OF COPY OF INTERNATIONAL
PRELIMINARY REPORT ON PATENTABILITY
(CHAPTER I OF THE PATENT COOPERATION
TREATY)

(PCT Rule 44bis.1(c))

Date of mailing (day/month/year)

31 August 2006 (31.08.2006)

Applicant's or agent's file reference

H0005333-1160

IMPORTANT NOTICE

International application No.

PCT/US2005/005305

International filing date (day/month/year)

18 February 2005 (18.02.2005)

Priority date (day/month/year)

20 February 2004 (20.02.2004)

Applicant

HONEYWELL INTERNATIONAL INC. et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference H0005333-1160	FOR FURTHER ACTION	See item 4 below
International application No. PCT/US2005/005305	International filing date (<i>day/month/year</i>) 18 February 2005 (18.02.2005)	Priority date (<i>day/month/year</i>) 20 February 2004 (20.02.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant HONEYWELL INTERNATIONAL INC.		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).	
2.	This REPORT consists of a total of 7 sheets, including this cover sheet.	
In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.		
3.	This report contains indications relating to the following items:	
	<input checked="" type="checkbox"/> Box No. I	Basis of the report
	<input type="checkbox"/> Box No. II	Priority
	<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
	<input type="checkbox"/> Box No. IV	Lack of unity of invention
	<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
	<input type="checkbox"/> Box No. VI	Certain documents cited
	<input type="checkbox"/> Box No. VII	Certain defects in the international application
	<input checked="" type="checkbox"/> Box No. VIII	Certain observations on the international application
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Date of issuance of this report 22 August 2006 (22.08.2006)</td> </tr> <tr> <td style="padding: 5px;">Authorized officer Beate Giffo-Schmitt e-mail: pt03@wipo.int</td> </tr> </table>	Date of issuance of this report 22 August 2006 (22.08.2006)	Authorized officer Beate Giffo-Schmitt e-mail: pt03@wipo.int
Date of issuance of this report 22 August 2006 (22.08.2006)			
Authorized officer Beate Giffo-Schmitt e-mail: pt03@wipo.int			

PATENT COOPERATION TREATY

REC'D 08 JUN 2005

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From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JS2005/005305

International filing date (day/month/year)
18.02.2005

Priority date (day/month/year)
20.02.2004

International Patent Classification (IPC) or both national classification and IPC
B29C70/48, B29C45/14

Applicant
HONEYWELL INTERNATIONAL INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2005/005305

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2005/005305

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	3-10
	No: Claims	1,2
Inventive step (IS)	Yes: Claims	3
	No: Claims	1,2,4-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V.

1 Reference is made to the following documents:

D1 : US 6 537 470 B1 (WOOD MICHAEL D ET AL) 25 March 2003 (2003-03-25)

D2: EP-A-1 236 564 (BPW BERGISCHE ACHSEN KOMMANDITGESELLSCHAFT)
4 September 2002 (2002-09-04)

2 INDEPENDENT CLAIM 1

2.1 Document D1, which is considered to represent the most relevant state of the art, discloses (unclear expressions have been printed in *italics* see also Box VIII of this opinion, the references in parentheses applying to this document):
a *rapid* resin or pitch transfer molding apparatus (see abstract), which apparatus comprises:
means for melting and conveying a resin or pitch (figures 2a and 2b); a mold (figure 5) arranged so that melted resin or pitch is conveyed from the melting and conveying means into an annular mold cavity (35) within a removable insert (20, 21) in the molding apparatus, wherein said insert comprises means (col. 9, lines 44 to 51) for effecting flow of the resin or pitch from the top (24) and bottom (25) of the mold cavity (35) to vents (22, 32) located in the centre of the mold cavity, at the top and/or bottom of the mold cavity, and/or annularly around the mold cavity (22, 32); and means (12) disposed at the mold to constrain the mold during supply of the resin or pitch into the mold.

The subject-matter of claim 1 is therefore not novel (Article 33(2) PCT)

2.2 The subject matter of dependent claim 2 is also known from document D1 (see col. 17, line 47)

2.3 The features of dependent claim 3 are neither known from nor rendered obvious by

the prior art. The combination of supply channels situated in mould inserts allows fast optimisation of resin flow to obtain optimum preform impregnation without having to replace the complete mould.

3. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 4 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 4, and discloses (the references in parentheses applying to this document): a *rapid* resin or pitch transfer molding process, comprising the steps of: arranging a porous preform (18), at a temperature above a melting point of a resin or pitch to be transferred into the preform, in an annular mold cavity (19) defined by a top half that includes an annular groove (figure 5) and a bottom half that includes an annular groove opposed to the top half, so that the top half annular groove and the bottom half form annular groove said annular mold cavity (figure 5), wherein a valve (27) is operated to admit resin or pitch in the top half and the bottom half of the mold, and wherein said annular mold cavity is provided with an arrangement for venting (22, 44) and/or providing a vacuum thereto (col. 10, lines 28 to 31) ; effecting flow of the resin or pitch through the preform located in the mold cavity to vents located in the centre of, at the top and/or bottom of (col. 10, lines 26, 27) , and/or annularly around the mold cavity (22), in order to effect impregnation of the preform; cooling the resulting resin-infiltrated or pitch-infiltrated preform to below the melting point of the resin or pitch(claim 1); and removing the impregnated preform from the mold (claim 1).

The subject-matter of claim 4 therefore differs from this known document D1 in that a plurality of melt supply channels is disposed in the top half and in the bottom half of the mold to operatively communicate with said annular mold cavity.

The problem to be solved could be defined as insufficient impregnation or impregnation speed as cause by the relatively high viscosity of the resin used or the high flow resistance.

The use of multiple resin inlets and/ or resin flow channels in a mould cavity to allow

a more effective resin impregnation is well known in the art of resin transfer moulding of high viscosity resins. See for instance document D2, col. 9, lines 5 to 47).

Therefore, adding additional resin inlet points and/or resin supply channels, is considered to be customary practice for the skilled man in order to optimize resin flow and prevent dry spots in the preform after the resin transfer process has finished, without the exercise of inventive skill.

4. The features of dependent claims 5 to 10 are not considered to be inventive either as they are known from D1 (claims 5 to 9) or considered to be obvious (claim 10).

Re Item VIII.

5. The term 'rapid' used in claims 1 and 4 is vague and unclear and leaves the reader in doubt as to the meaning of the technical features to which it refers, thereby rendering the definition of the subject-matter of said claims unclear, Article 6 PCT. This expression is of a relative nature and does not define by itself how fast the resin transfer takes place.
6. It is clear from claim 1 that the feature of a removable mould insert is essential to the definition of the invention. Since independent claim 4 does not contain this feature, it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.